Design and Planning of Floating Systems

- Floating structures
- TLPs
- Stationkeeping

API RP 2FPS Second Edition, October 2011

Planning, Designing, and Constructing Floating Production Systems

- RP was first published in 2001
  - Written as an overlay to class rules for floaters
  - Very few detailed design recipes provided
  - Consideration for site specific design criteria vs. trading vessel criteria
  - Interface with hydrocarbon process plant, mooring and riser systems
  - Emphasis on design for long term operation on site without going to drydock
- Second edition published in 2011
  - Merged with ISO 19904-1
  - Mainly similar contents to original 2FPS
  - ISO language and style, more systematic approach
  - ISO document had international input and review

Floating Systems – RP 2FPS

Table of Contents

Floating Systems – RP 2FPS

- New material compared to 1st Edition
  - Structural Integrity management system
    - SIM Philosophies
    - Planning, implementation issues
    - Minimum requirements
  - Disconnectable FPS units covered in more detail
  - New metocean criteria references
  - Air gap requirement updated
  - Robustness check added
  - Guidance on hurricane survival and reassessment

Floating Systems – RP 2FPS

- Issues for next edition
  - Use of LRFD vs. WSD in the Gulf of Mexico
    - Some confusion as to how to apply LRFD format to a dynamic system
    - Partial factors given in the RP were taken from North Sea practice and may not be appropriate for GOM metocean conditions
    - Current guidance in RP 2FPS is to not use LRFD for GOM applications
  - Post ALS behavior
  - Application to round floaters and FLNG vessels?

API RP 2T Third Edition, July 2010

Planning, Designing, and Constructing Tension Leg Platforms

- 1st Edition 1987
  - 2 TLP's had been installed
  - Consensus document on important issues
- 2nd Edition 1997
  - Update format
  - Incorporate Fire and Blast, Wind Spectra Addendums
- 3rd Edition 2007
  - 20 years of practice
  - Major re-write
  - Extended scope
  - "Meat on the bones"
  - Probabilistic scan
  - 1000 yr survival criteria
  - Robustness checks

Floating Systems – RP 2T

Table of Contents

Floating Systems – RP 2T

- **Section 5 Design Criteria**
  - **Safety Categories**
    - A – Operational
    - B – Extreme Conditions
    - S – Survival Conditions (nominal 1000 yr)
    - C – Fatigue Conditions
  - **Stability**
    - Free Floating Stability per MODU code for Free Floating Conditions
    - In-place Stability is Structural – Global Performance Loadcases
  - **Environment**
    - Reference to Bul 2INT-MET and RP 2MET
    - Data selected after consultation with Designer and Metocean Specialist
    - Defined as Response-Based – 100 yr event expected to give 100 yr response
    - Probabilistic scan required

Floating Systems – RP 2T

- **Section 7 Global Response**
  - **Design options – n-year and Response Based**
  - **Code Equations provided**
  - **Survival case for global performance**
  - **1000 yr for Deck Clearance check**
  - **1000 yr for Minimum Tension check**
  - **Probabilistic Scan Described**
  - **Extensive Commentary**
    - **VIV/VIM**
    - **Ringing and Springing**
    - **Long Term Prob. Analysis and Response Based Criteria**

2014 API/BSEE
Winter Codes & Standards Workshop

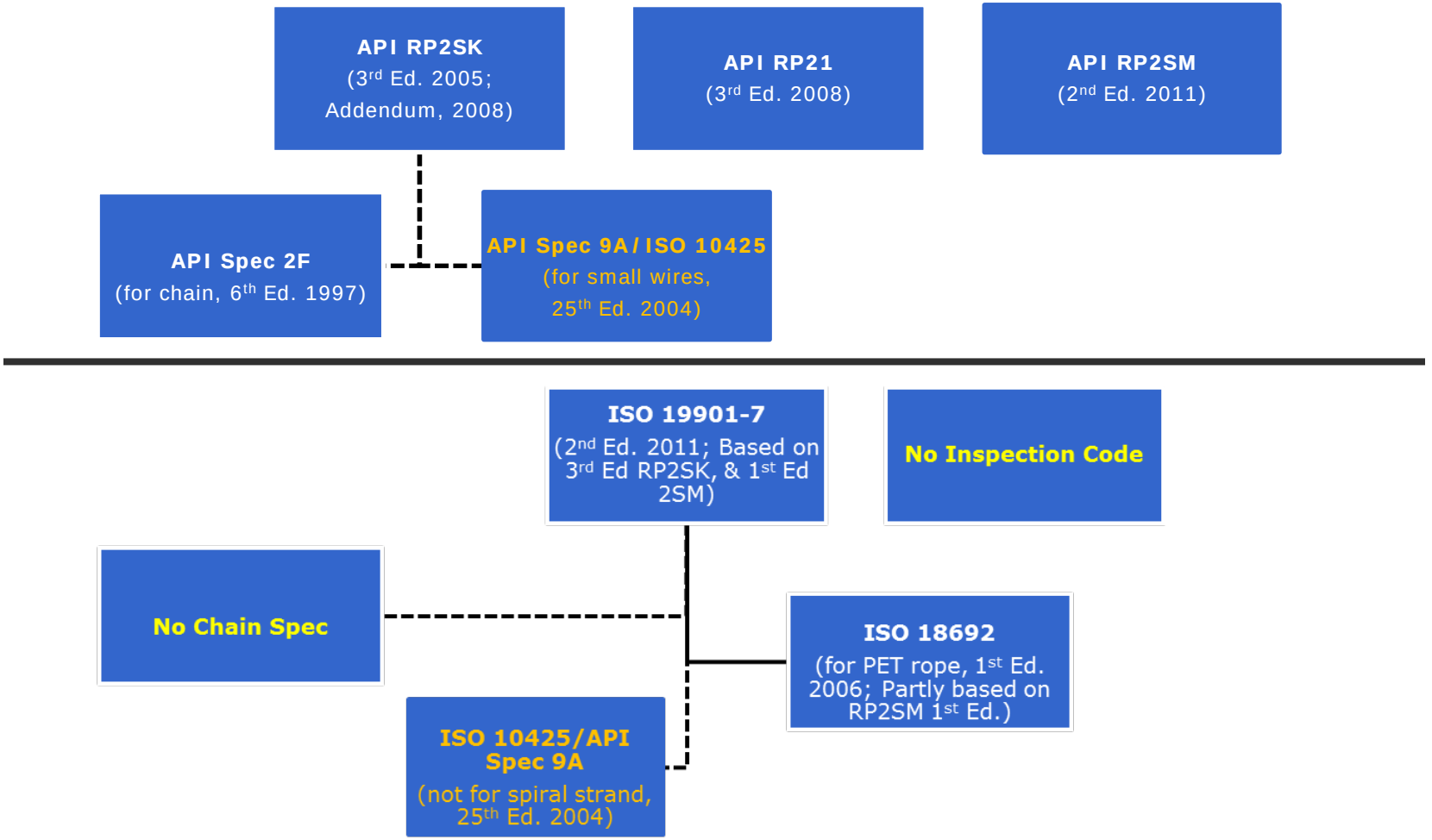
Resource Group 2 Updates

New Orleans, LA

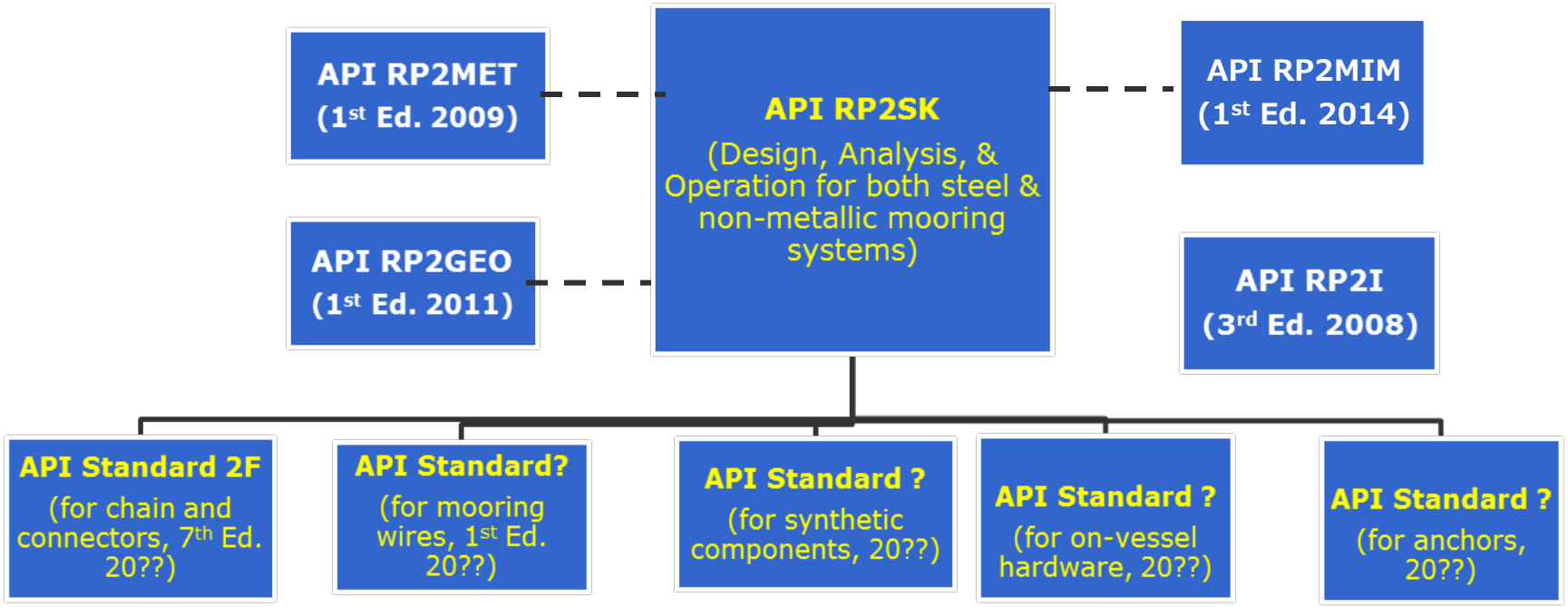
Overview

- Current station keeping standards
- Opportunities
- What has been done so far?
- What will be done in next 4-5 years?
- Questions

Current Structure – API & ISO



Proposed API Structure



What's Been Done (RP2SK)?

- Decision to format RP2SK for easier ISO adoption
- RP2SK held kickoff and 5 DRMs since June
  - Reviewed sections 3, 4, 5, 6, 8 and Appendices A, B, C, E, H, CH, K
- API SharePoint Site up and running

What's Been Done (Spec 2F)?

- Spec 2F held Spring workshop 2/19-2/20
  - Formed 4 workgroups for chain and 4 workgroups for connectors
- Spec 2F held Fall workshop 9/10-9/11
  - Report of workgroups and plans through end of year
- API SharePoint Site up and running

Short-term Forecast

- RP 2?? (Forged Accessories) – **2014**
  - TOC finalized by 2/2014
- Bull 2?? (Inspection Accessories) – **2014**
  - Examines new inspection methods for QC
  - TOC Finalized by 2/2014
- RP 2?? (Mooring Integrity Mgmt) – **2014**
  - DeepStar Draft Issued 9/2013
- RP 2SK – **2013-2016**
  - Review process initiated

Green indicates **"in progress"**

Long-term Forecast

- Anchors – **2015?**
- Mooring Wires – **2015?**
- Non-Metallic Accessories – **2016?**
- On Vessel Hardware – **2016?**

Red indicates **"not started"**

Thank You

Who has my first question?